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| EXAMINER | |
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| HAJNIK, DANIEL F | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/532,904 | REDERT ET AL. | |
| | **Examiner** | **Art Unit** | |
| | DANIEL F. HAJNIK | 2628 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _09 November 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-4 and 7-21_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-4 and 7-21_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _27 April 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/9/2009 has been entered.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 1-4, 7-10 and 18-21** rejected under 35 U.S.C. 103(a) as being unpatentable over Gelsey (US Pat. No. 6,344,837). in view of Moseley et al. (US Patent 5,953,148).

***Regarding Claim 1.***

Gelsey discloses a method for visualization of a 3-dimensional (3-D) image, the method comprising acts of:

converting a 3-D scene model into a plurality of 3-D scene points;

(See e.g. col. 9 lines 4-5) into a plurality of 3-D scene points *(See e.g. col. 9 lines 4-10 where the 3-D scene point is the point where R intercepts S. See also e.g. Figs 1, 2 and 3);*

providing at least a portion of the plurality of 3-D scene points to a 3-D display plane comprising 3-D pixels that are directionally modulated *(See e.g. col. 9 lines 25-29, where SP = scene point, and DMP = 3-D pixel);*

calculating the 3-D pixels a contribution of light *(col 8, lines 26-36 and in figure 13) from the 3-D pixel to generate at least in part a scene point of the plurality of 3-D scene points (in figure 7 where the cube is a directionally modulated pixel or 3-D pixel; in this figure, the point source of light is 15; a scene point is shown in figure 8 for objects 4, 6, and 8; a scene point is any individual point representing part of the object surface or definition as shown; in figure 8, a plurality of directionally modulated pixels or 3-D pixels are located in image display device IDD 26);*

performing at least one of emitting and transmitting the light by each of the 3-D pixels that is calculated to contribute to the scene point *(See e.g. Fig 3 block 10 and Fig. 4A and See e.g. Abstract, "each directionally-modulated pixel is provided by locating a point source of light behind a microminiature array of liquid crystal device (LCD) elements, each of which are operated by a control device programmed to vary the light transmission characteristics of each element at a given time ").*

Gelsey does not explicitly teach the remaining claim limitations.

Moseley teaches the claimed:

wherein the contribution of light of a 3-D pixel to a certain 3-D scene point is calculated within one 3-D pixel of a row or column prior to the provision of the 3-D scene points from the one 3-D pixel that calculated the certain 3-D scene point to remaining 3-D pixels of the row or column, respectively *(in figures 19 and 20 where the gate lines 40 and the source lines 39 enable one 3-D pixel, shown as diamond shaped areas in the figures, to be calculated or its light contribution to be calculated before another pixel in that same row or column is calculated, i.e. the pixels are calculated sequentially one by one across the row as an example; also see col 3, lines 13-21, "Such conductors generally comprise row conductors (normally referred to as "gate lines" in standard thin film transistor LCDs), which extend <u>essentially horizontally and connect all the pixels in each row, and column conductors</u> (referred to as "source lines") which extend essentially vertically and <u>interconnect the pixels</u> in each column. In matrix addressed devices, the gate and source lines <u>are addressed in sequence</u> to control the pixels so as to avoid having an individual electrode connection for each pixel"; also see figures 1 and 11 in Moseley; these figures show LCD pixels arranged as rows and columns. Notice at the bottom left side of figure 1 that 3 pixels are shown. The figure shows that each of these pixels corresponds to views 1 to 3; these sets of 3 pixels make up the claimed "3D pixel". This interpretation is based upon the fact that since each pixel is contributing to a different viewpoint, these pixels when taken together make up a 3D pixel which contribute to forming an autostereoscopic 3D display. The forming of autostereoscopic 3D display in Moseley is mentioned in col 6, lines 56-58. In addition, if one looks to the top part of figure 1 in Moseley, it shows that every 3 pixels are divided into units that correspond to the lenticular display. This shows that the reference is grouping 3 pixels from the LCD display together to form one 3D pixel unit; figure 11 of Moseley*

*shows how the 3D pixels are connected together; Since each 2D pixel in Moseley is connected together as shown in figure 11, when one considers 3D pixels taken as a unit together, these units are also interconnected since the gate lines 40 passed between each of the groups of pixels. For example, consider at the bottom of figure 11 where the labels show that 2D pixels correspond to "view 1", "view 2", "view3" and then "view 1" again. These labels teach the concept of 3D pixels being processed as groups of consecutive 2D pixels where each one corresponds to a view 1 to 3; the gate lines 40 connect one 3D pixel (which is a grouping of three 2D pixels each correspond to views 1 to 3) at the start of a horizontal row to another 3D pixel in the same horizontal row; the first 3D pixel in the horizontal row is a master 3D pixel )*

such that one of the pixels of the row or column acts as a master pixel for the row or column, the master pixel being the 3-D pixel of a row or column that calculated the certain 3-D scene point while other pixels of the row or column act as slave pixels, the slave pixels being the 3-D pixels of a row or column that receive the calculated certain 3-D point from the master pixel *(in figures 19 and 20 where the gate lines 40 and the source lines 39 enable one pixel to influence a neighboring pixels in that row; also see col 3, lines 13-21 where the interconnection of pixels enables sequential addressing, thus a first pixel in the row acts as a master pixel and other pixels in that row are slave pixels; also see figures 1 and 11; in figure 11, the gate lines 40 connect one 3D pixel (which is a grouping of three 2D pixels each correspond to views 1 to 3) at the start of a horizontal row to another 3D pixel in the same horizontal row; the first 3D pixel in the horizontal row is a master 3D pixel, the 3D pixels that are located further down the horizontal row are slave 3D pixels; these 3D slave pixels are connected to the master 3D pixel through the gate lines 40).*

It would have been obvious to those having ordinary skill in the art at the time of invention to use the interconnect of the 3-D pixels of Moseley with the 3-D pixels of Gelsey in order to address pixels with less direct circuitry (col 3, lines 18-21 of Moseley). Gelsey is modified by Moseley by incorporating the interconnections of 3-D pixels, i.e. the gate lines 40 in figures 11 or 19 to the 3-D pixels used in Gelsey.

***Regarding Claim 2.***

Gelsey discloses the method according to claim l, wherein light is emitted and/or transmitted by 2-D pixels comprised within the 3-D pixels, each 2-D pixel directing light into a different direction contributing light to a scene point of the 3-D scene model.
(See e.g. Gelsey col. 4 line 54 through col. 5 line 8 especially “centrally located point source of light within … modulation regions” and “light emitted in different directions having the different visual properties appropriate for the scene being displayed.” The claimed 2-D pixels are also shown in figure 7 as rectangular or square modulation regions 24)

***Regarding Claim 3.***

Gelsey does not explicitly disclose the method according to claim 1, wherein the 3-D scene points are provided sequentially, or in parallel, to the 3-D pixels.

However, Moseley teaches the use of parallel access to 3-D pixels through their source lines 39 in figures 19 and 20 where these lines can access multiple rows at once and teaches the use of sequential access to 3-D pixels through their use of gate lines 40 in figures 19 and 20 (also see col 3, lines 13-21).

It would have been obvious to those having ordinary skill in the art at the time of invention to modify the display method of Gelsey to provide 3-D scene points to 3-D pixels sequentially or in parallel as taught by Moseley because highly parallel data processing systems provide improved performance.

***Regarding Claim 4.***

Gelsey does not discloses the claimed feature. Moseley teaches the claimed method according to claim 1, wherein the calculation of the contribution of light of a 3-D pixel to a certain 3-D scene point is made previous to the provision of the 3-D scene points to the 3-D pixels *(in figure 11 where a contribution of light for a 3D pixel at the left side of the horizontal rows or pixels is calculated below the calculations for other 3D pixels are performed on that horizontal row; in this figure, the gates lines connect the 3D pixels together and the gate lines allow calculation to proceed from one 3D pixel to another 3D pixel down the lines).* It would have been obvious to apply Moseley to Gelsey for same reasons as stated in claim 1.

***Regarding Claim 7.***

Gelsey does not explicitly discloses all the claimed limitations.

The combination of Gelsey and Moseley teach the claimed: the method according to claim 1, wherein a 3-D pixel alters the co-ordinates of a 3-D scene point prior to putting out the altered 3-D scene point from the 3-D pixel to at least one neighboring 3-D pixel *(where Gelsey shows a 3-D pixel, a cubic directionally modulated pixel, in figure 7 and 3-D scene points in figure 8 where the shapes projected from screen 26 are made of a plurality of scene points; in*

*figure 8, each 3D pixel affects the coordinates or position of the 3-D scene shapes because the 3-D pixels are located inside screen 26; Moseley shows how the output of one cell or pixel may alter data of an adjacent or neighboring cell in figures 11, 19 and 20 through their sequential connecting of 3-D pixels. This connection between pixels, i.e. gate lines 40, which share a common row, establishes intercell communication, i.e. see col 3, lines 16-18. When the two references are combined, all the claimed features are taught).*

It would have been obvious to one of ordinary skill in the art to use the intercell communication in a row as taught by Moseley with the 3D pixel array in Gelsey in order to avoid having an individual electrode connection for each pixel (col 3, lines 20-21 of Moseley).

***Regarding Claim 8.***

Gelsey discloses the method according to claim 1, wherein if more than one 3-D scene point needs the contribution of light from one 3-D pixel, the depth information of the 3-D scene point is decisive *(See e.g. col. 4 lines 49-53 where occlusion depends on viewing direction.)*

***Regarding Claim 9.***

Gelsey discloses the method according to claim 1, wherein 2-D pixels of the 3-D display plane transmit and/or emit light only within one plane. *(See e.g. col. 6 lines 1-24, esp. 18-19, also see figure 7, where the rectangular or square modulation regions 24 emit light only within one plane as shown because the front surface of the cubic directionally modulated pixel is flat).*

***Regarding Claim 10.***

Gelsey discloses the method according to claim 1, wherein color is incorporated by spatial or temporal multiplexing within each 3-D pixel *(See e.g. col. 5 lines 8-24 and Fig. 5. See also col. 5 lines 55-65 where the RGB, red blue green, color components are multiplexed).*

***Regarding Claim 18.***

Gelsey teaches the method according to claim 1, wherein each 3-D scene point has co-ordinates x, z, y and a luminance value *(in figure 7 where the cube shown is a directionally modulated pixel with a point light source 15 that has a luminance value is controlled through modulation regions 24; these 3-D pixels produce 3-D scene points with corresponding luminance values through emitting and transmission of light; the x, y, and z coordinates are shown in figure 8 where the 3-D scene points have corresponding positions values including a depth component that is used to represent objects 4, 6, and 8 that appear to come out of image display device 26)*

***Regarding Claim 19.***

The reasons and rationale for the rejection of claim 1 is incorporated herein.

Gelsey does not explicitly disclose: performing at least one of emitting and transmitting the light by each of the 3-D pixels that is calculated to contribute to the scene point, wherein a 3-D pixel alters the co-ordinates of a 3-D scene point prior to putting out the altered 3-D scene point from the 3-D pixel to at least one neighboring 3-D pixel and wherein for each 3-D pixel that receives an altered 3-D scene point, the act of calculating comprises an act of calculating the contribution of light from the 3-D pixel based on the altered 3-D scene point.

Moseley teaches the claimed: performing at least one of emitting and transmitting the light by each of the 3-D pixels that is calculated to contribute to the scene point *(in figures 2 and 4 where emitted and transmitted light is shown from the pixels in the display on the left; also see figure 1)*, wherein a 3-D pixel alters the received co-ordinates of a 3-D scene point prior to putting out the altered 3-D scene point from the 3-D pixel that altered the 3-D scene point to at least one neighboring 3-D pixel that receives the altered 3-D scene point *(in figures 11, 19 and 20 where 3-D pixel data travels sequentially through gate lines 40 where one 3-D pixel, shown as diamond shaped areas in the figures, may alter co-ordinates for a 3-D scene point that is emitted and transmitted before it reaches an adjacent 3-D pixel along gate line 40 in the sequentially processing; data altered on the 3-D pixels in figures 19 and 20 affect the 3-D scene points produced by the pixels as shown as in figures 2 and 4)* and wherein for each 3-D pixel that receives an altered 3-D scene point, the act of calculating at the 3-D pixel comprises an act of calculating the contribution of light from the 3-D pixel based on the altered 3-D scene point *(col 3, lines 13-21 and in the sequential processing used in figures 19 and 20 through gate lines 40 which calculate contributions of light from each 3-D pixel in the figures to produce 3-D scene points as shown in figures 2 and 4; also see figure 1 where a 3D pixel is made up a grouping of three 3D pixels correspond to each view 1 to 3).*

It would have been obvious to one of ordinary skill in the art to use Moseley with Gelsey. The motivation of claim 1 is incorporated herein.

***Regarding Claims 20 and 21.***

Gelsey does not explicitly disclose the claimed features.

Moseley teaches the claimed: wherein the altered 3-D scene point is altered to account for the relative difference in position between two 3-D pixels *(in figure 15a where the emitted and transmitted light from the 3-D pixels in the display 1 produce 3-D scene points, shown as rays, that are altered in slightly difference positions to account from relative differences between two adjacent 3-D pixels in display 1)* and wherein the act of calculating is performed without a use of global position information *(in figures 11, 19 and 20 where the calculation is performed using the sequential data from gate lines 40 not global position information; i.e. one 3-D pixel is calculated based upon a previous 3-D pixel along gate line 40; also see col 3, lines 19-20).*

As per claims 20 and 21, it would have been obvious to one of ordinary skill in the art to use Moseley with Gelsey. The motivation of claim 1 is incorporated herein.

**Claims 11-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelsey (US Pat. No. 6,344,837). in view of Moseley et al. (US Patent 5,953,148) in further view of Norman (US Pat. No. 6,154,855).

***Regarding Claim 11.***

The reasons and rationale for the rejection of claim 1 is incorporated herein.

Gelsey does not explicitly disclose: said 3-D pixels comprise an input port and an output port for receiving and putting out 3-D scene points of a 3-D scene. However, the combination of Norman and Gelsey teaches such an arrangement *(Norman: col. 32 lines 13-20, also see figure 1D where the cells in grid each represent a pixel, and each cell has their own input and output*

*ports, i.e. cell S has output to cell A and cell A can input from cell S; Gelsey also provides part of the claimed feature by teaching of 3-D pixels that each make up a cell, i.e. see figure 7 where the cube represents one 3D pixel).*

It would have been obvious to persons having ordinary skill in the art at the time of invention to modify the 3-D pixel of Gelsey to incorporate an input and an output port as in Norman. It was known that having cells equipped with direct input and direct output means allows the array to handle input intensive tasks without encountering an input bottleneck (See e.g. Norman col. 32 lines 22-25.)

Gelsey is modified by Norman by incorporating one cell in the array of local processors of Norman into each 3-D pixel in Gelsey to perform calculations rather than at their central processor. Gelsey can be modified according to the following passages in the reference: *(Gelsey: col 5, lines 39-43, "The modulation of each of the modulation regions 16 is controlled by an appropriate control system such as one or more computer processors in conjunction with suitable interface circuitry" and Gelsey: col 4, lines 31-35, "As shown in the latter, the DMPs 14 are configured in rows and columns with minimum spacing therebetween. Note also that the electronic circuitry for controlling the modulation of the DMPs 14 is also contained within the IDD 12").* In this case, Gelsey states that more than one processor may be used with the system. Norman provides an array of processors. In addition, Gelsey states that electronic circuitry for each DMP (directionally modulated pixel or 3-D pixel) is already present in the IDD (image display device). Thus, since some of the circuitry is already present this would make it easier to modify Gelsey to incorporate the array of processors as disclosed by Norman because each processor would need to communicate with the pixel by way of circuitry.

***Regarding Claim 12***

As per claim 12, this claim is similar in scope to claims 3 and 7, and thus is rejected under the same rationale.

***Regarding Claim 13.***

Gelsey teaches the 3-D display device according to claim 11, wherein the 3-D pixels comprise a spatial light modulator with a matrix of 2-D pixels. *(See e.g. Gelsey Fig. 5, in particular, the numerous modulation regions 16; in this case the modulation regions 16 are the claimed matrix of 2-D pixels and the claimed 3-D pixel is the directionally modulated pixel 14).*

***Regarding Claim 14.***

Gelsey teaches the 3-D display device according to claim 13, wherein the 3-D pixels comprise a point light source, providing the 2-D pixel with light *(See e.g. Gelsey 3-D display 26 in figure 8; also see figure 7 which shows a 3-D pixel 14 with a point source of light 15, the 2D pixels are shown as rectangular or square modulation regions 24).*

***Regarding Claim 15.***

Gelsey does not explicitly disclose the 3-D display device according to claim 13, wherein the 3-D pixels comprise registers for storing a value determining which ones of the 2-D pixels within said 3-D pixel contribute light to a 3-D scene point.

However, Norman teaches the use of arrays of processors where each processor has its own memory (See e.g. Norman Fig. 10 block 1016 where this memory is a plurality of registers, see also col. 2 lines 30-34.)

It would have been obvious to persons having ordinary skill in the art at the time of invention to modify the value determination of pixel contribution of light to a 3-D scene point as in Gelsey to incorporate storage registers as taught by Norman. It was known that systems comprising arrays of processors where each processor has its own memory can have the advantage of removing the von Neumann uni-processor bottleneck and the multi-processor memory bottleneck for parallel applications (See e.g. Norman col. 2 lines 34-36).

**Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gelsey (US Pat. No. 6,344,837) in view of Moseley et al. (US Patent 5,953,148) in further view of Seitz, et al. (US Pat. No. 6,363,170).

***Regarding Claim 16.***

Gelsey does not explicitly disclose the method of claim 1, wherein the calculating of the contribution comprises calculating whether a current 3-D scene point is closer to a viewer than a past 3-D scene point.

However, See e.g. Seitz, et al. col. 6 line 66 - col. 7, line 7. Here, voxel processing involves 1-bit Z-buffering, or occlusion detection which determines whether the current scene pixel is closer to a viewer than the previous 3-D scene point.

It would have been obvious for persons having ordinary skill in the art to modify the contribution calculation of Gelsey to determine relative depth of a scene point as taught by Seitz et al. It was known that use of depth testing can have the advantages of reducing required processing and preventing display of hidden surfaces.

**Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gelsey (US Pat. No. 6,344,837) in view of Moseley et al. (US Patent 5,953,148) in further view of Norman (US Pat. No. 6,154,855) in further view of Seitz, et al. (US Pat. No. 6,363,170).

***Regarding Claim 17.***

Gelsey does not explicitly disclose the 3-D display device of claim 11, wherein the control unit calculates whether a current 3-D scene point is closer to a viewer than a past 3-D scene point.

However, See e.g. Seitz, et al. col. 6 line 66 - col. 7, line 7. Here, voxel processing involves 1-bit Z-buffering, or occlusion detection which determines whether the current scene pixel is closer to a viewer than the previous 3-D scene point.

It would have been obvious for persons having ordinary skill in the art to modify the contribution calculation of Gelsey to determine relative depth of a scene point as taught by Seitz et al. It was known that use of depth testing can have the advantages of reducing required processing and preventing display of hidden surfaces.

***Response to Arguments***

1. Applicant's arguments filed 11/9/2009 have been fully considered but they are not persuasive.

Applicant argues the following:

> The Final Office Action relies on Moseley for teaching that which is admitted missing from Gelsey, however, it is respectfully submitted that reliance on Moseley is misplaced. While Moseley does show in FIGs. 19 and 20 and Col. 3, lines 13-21, cited in the Final Office Action, (emphasis added) "'gate lines' in standard thin film transistor LCDs), which extend essentially horizontally and connect all the pixels in each row, and column conductors (referred to as "source lines") which extend essentially vertically and interconnect the pixels in each column", it is respectfully submitted that this is insufficient to teach, disclose or suggest

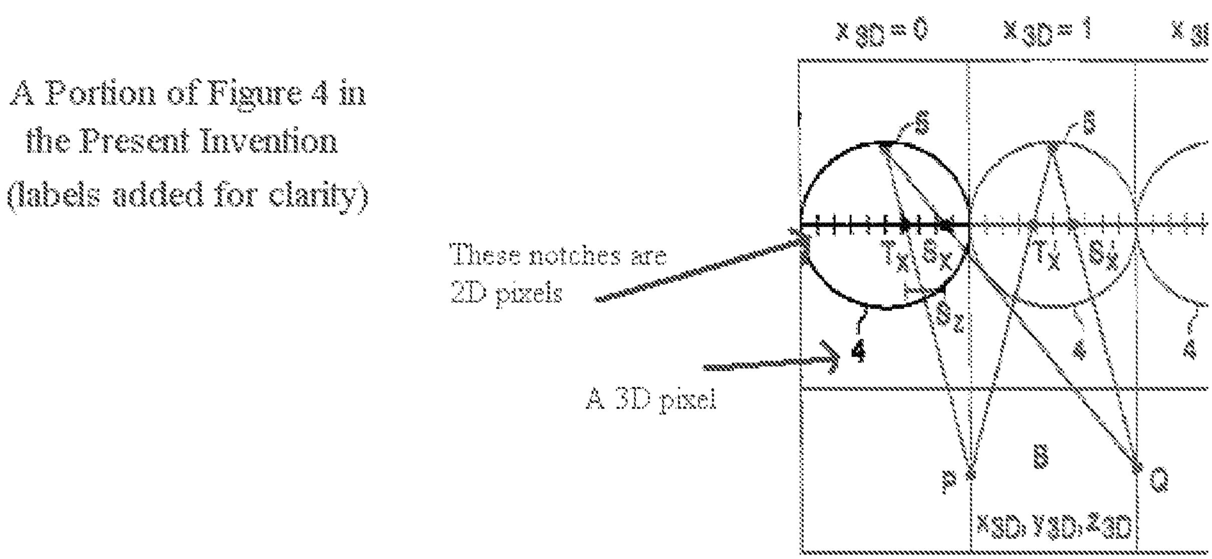
(bottom of page 11 in filed remarks) and further argues:

> the recitations of the claims. In fact, Moseley merely shows a standard interconnection scheme for interconnection of rows and columns of pixels that is utilized by "standard thin film transistor LCDs" (see above cited from Moseley) to minimize interconnections to the pixels.

(top of page 12 in filed remarks).

The examiner respectfully disputes some of the conclusions made in regards to the passages as mentioned in Moseley for the following reasons. The examiner believes that groups of these original 2D pixels in the standard thin film transistor LCD make a 3D pixel in Moseley. The reference of Moseley is producing an autostereoscopic display by connecting these groups of pixels to form 3D images. The 3D images are formed by having 1 pixel in each of these groups of pixels project image light data for a different viewpoint in space. Taking 3 of these 2D pixels (where each 2D pixel is projecting a different viewpoint) together makes up one 3D pixel in Moseley. The following gives more details as to this explanation:

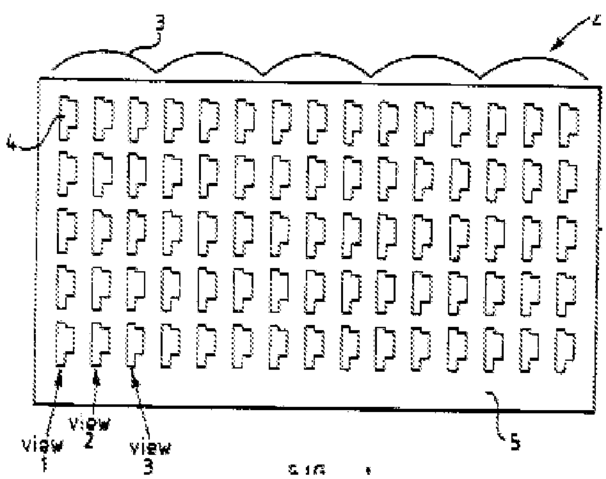
This interpretation of 3D pixel is similar to that which is described in applicant's own disclosure. For example, consider the following diagram that is based upon a portion of applicant's figure 4:




In this figure, 3D pixels are shown as the circles labeled "4". Within each of these 3D pixels are groups of 2D pixels. These 2D pixels work together within a 3D pixel to produce light at different locations such as locations "P" and "Q" at the bottom of the diagram. These 2D

pixels producing light in different locations (such as “P” and “Q”) appears to be an important part of creating the 3D effect on the screen for the autostereoscopic 3D display system. For further explanation, one should look to what is disclosed by the prior art reference of Moseley which is relied upon in the rejection for showing some the claimed “3D pixels” being interconnected together.

Moseley in col 3, lines 13-21 does mentioned that “standard thin film transistors" are used in their system as mentioned by the applicant’s in their argument. Moseley is special however in that while it has the “standard thin film transistors", Moseley is also capable of produce an autostereoscopic 3D display with their standard thin film transistor LCDs. For example, consider the following teachings (including figure 1) in Moseley which are shown as follows:




Col 6, lines 56-58

FIG. 1 illustrates diagrammatically the pixel layout of a known type of LCD disposed behind a lenticular screen to form an autostereoscopic 3D display;

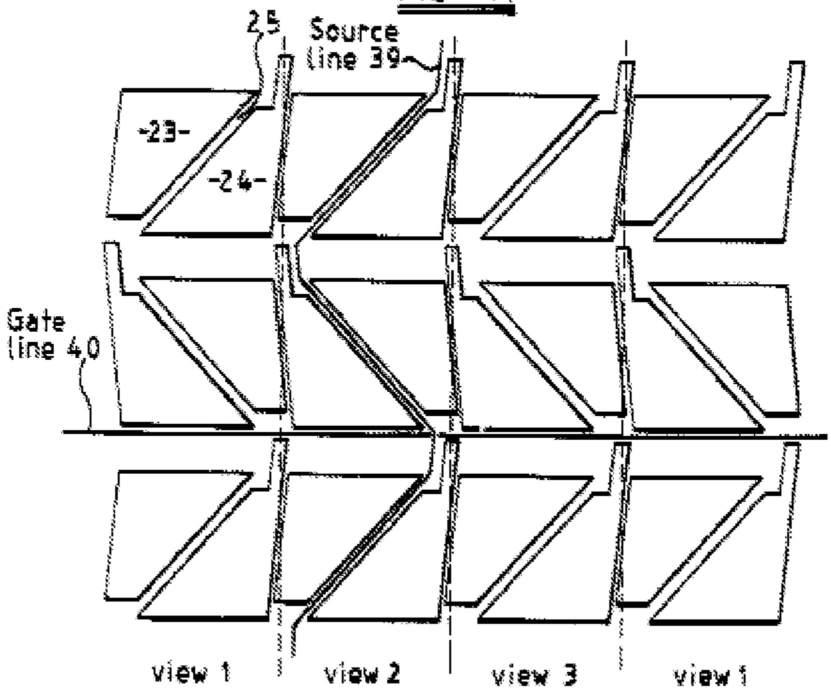
Figure 1 of Moseley above, shows LCD pixels arranged as rows and columns. Notice at the bottom left side that 3 pixels are shown. The figure shows that each of these pixels corresponds to views 1 to 3. The examiner believes that these sets of 3 pixels make up the claimed “3D pixel”. This interpretation is based upon the fact that since each pixel is contributing to a different viewpoint, these pixels when taken together make up a 3D pixel which

contribute to forming an autostereoscopic 3D display. The forming of autostereoscopic 3D display in Moseley is mentioned in col 6, lines 56-58. In addition, if one looks to the top part of figure 1 in Moseley, it shows that every 3 pixels are divided into units that correspond to the lenticular display. This shows that the reference is grouping 3 pixels from the LCD display together to form one 3D pixel unit.

In this respect, just as a 3D pixel in circle “4” in figure 4 of applicant’s invention is made up of a group of 2D pixels as shown with the notches across the horizontal line in figure 4, Moseley appears to also show a 3D pixel made up of different 2D pixels. In each case, the 2D pixels are used to create different viewpoints or directions for the light in order to produce an autostereoscopic 3D display effect for the viewer. The views 1 to 3 in Moseley perform a similar effect to the views “P” and “Q” in applicant’s figure 4. These views are used to create the 3D autostereoscopic effect in each system. Thus, Moseley has 3D pixels as shown in the layout and functioning of their system. Moseley appears to use different terminology in their system but both Moseley and the claimed invention each are organized in a similar manner and perform similar functions.

In addition, the examiner believes that the 3D pixels in Moseley (which are grouping of 2D pixels) are interconnected to pass or share information between the 3D pixels. For example, consider figure 11 of Moseley which is shown as follows:

FIG 11

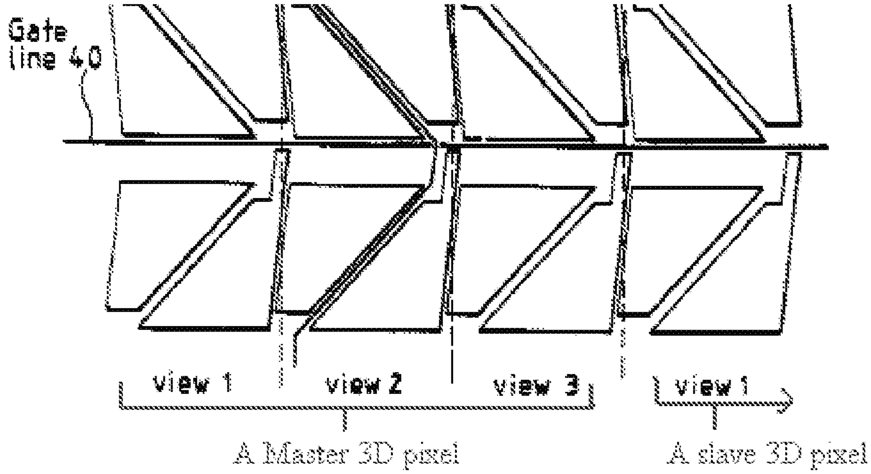



In this figure, the pixels that correspond to each view (1 to 3) are shown at the bottom. In addition, this figure shows show a gate line "40" connects these pixels horizontally together. In addition, this figure shows that source lines 39 connect these pixels vertically together.

In addition, since each 2D pixel in Moseley is connected together as shown in figure 11, when one considers 3D pixels taken as a unit together, these units are also interconnected since the gate lines 40 passed between each of the groups of pixels. For example, consider at the bottom of the figure where the labels show that 2D pixels correspond to "view 1", "view 2", "view3" and then "view 1" again. These labels teach the concept of 3D pixels being processed as groups of consecutive 2D pixels where each one corresponds to a view 1 to 3.

In addition, figure 11 of Moseley teaches the claimed master 3D pixel teaches the claimed slave 3D pixel. The following diagram below explains this interpretation:

A portion of figure 11 in Moseley with notes added for clarity




The diagram shows that if the master 3D pixel comprises the first three 2D pixels in the horizontal row, then this 3D master pixels may pass 3-D scene point data onto the slave 3D pixels later on down the horizontal row. This concept of connecting 3D pixels together is similar to that shown in applicant's figure 5, that is shown as follows:

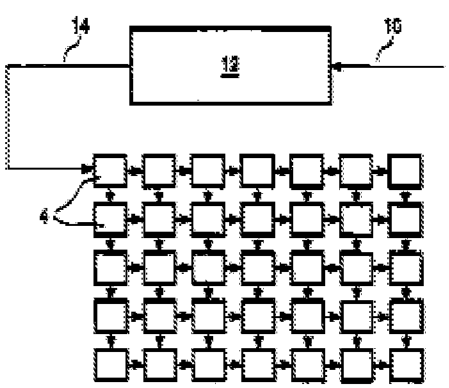



FIG. 5

Thus, the examiner respectfully disagrees with applicant's arguments that Moseley does not show the claimed features because Moseley has standard 2D LCD pixels. Rather, based upon the functionality and performance of autostereoscopic display in Moseley, the two systems are performing similar functions with each using 3D pixels.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL F. HAJNIK whose telephone number is (571)272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Daniel F Hajnik/
Examiner, Art Unit 2628